JA504 B-couplers

Jarag-L rigging system

USER MANUAL

Version 1.2

Chromlech
19, Avenue Gabriel Fauré – 35235 Thorigné Fouillard - FRANCE
Tel: +33 2.23.20.77.67 - Fax: +33 2.23.20.75.71
E-mail: contact@chromlech.com – Web: www.chromlech.com

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Update record

Vers.	*Date*	*Initials*	*Description*
1.0	17/12/10	fpl	First issue
1.1	23/05/11	fpl	Revision
1.2	26/09/11	fpl	Fixed some technical terms

1) Introduction

Thank you for buying the Chromlech JA504 B-couplers for the Chromlech Jarag-L JA521 array. This manual gives the information on using these couplers.

The manual describes how to fit the JA504 B-couplers to the Chromlech JA521 Jarag-L array.

⚠ ***NB:*** *Please read this manual carefully before using the B-couplers.*

2) Safety rules / Precautions in use

➢Chromlech's Jarag-L should only be rigged by qualified riggers. Please contact a qualified rigger for safety information.

➢Do not allow inexperienced persons to handle the Jarag-L rigging system.
The installation personnel must be trained in lifting techniques and must be fully familiar with this user manual. The installation personnel should wear statutory safety equipment while putting up and taking down the system.

➢Do not allow anybody, whether stage hands, artistes or members of the public, to climb on the Jarag-L rigging system.

➢Chromlech's JARAG-L rigging system complies with EC directives.

➢Some countries require stricter safety factors. The user is responsible for ensuring that Chromlech systems can be installed in accordance with the standards of the country where they are used.

➢Chromlech is not liable for rigging accessories that are not manufactured by Chromlech.

➢Always inspect the parts of the Jarag-L rigging system before fitting to check that they are not damaged or faulty. In particular, check the lifting points, the shafts with circlips and the locking pinsIf there is any doubt that one of these parts may be damaged or faulty, DO NOT USE THE PARTS CONCERNED

➢Read this manual carefully. Also be familiar with the manuals and safety procedures for auxiliary equipment that will be used with the Chromlech Jarag-L rigging system.

➢Ensure that the public and personnel are prevented from passing underneath the system while it is being rigged. The rigging area must be cordoned off and inaccessible to the public.

➢Never leave the rigging unattended during installation.

➢Do not place any object, even small or light, on the equipment during rigging. It may fall while the equipment is being suspended and cause personal injury.

➢Safety cables must be fitted when the system has been suspended at the required height.

➢The safety cables fittings depend on the local safety standards applicable in the country where the system is used.

➢Ensure that the system is secured and unable to swivel round the lifting equipment.

➢NEVER attach any equipment other than the Chromlech Jarag-L arrays to the Jarag-5 rigging system

➢The Jarag-L rigging system couplers must only be used with the Chromlech Jarag-L array.

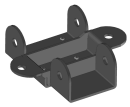
➢The Jarag-L rigging system must be checked regularly by qualified personnel.

➢Take the same care when taking the system down as when installing it. Pack it away carefully after use.

3) Glossary

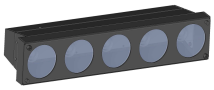
3.1 Part 1: Equipment

Bracket



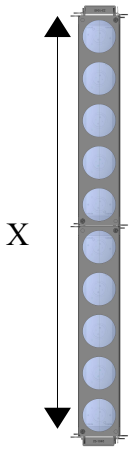
B-coupler

Jarag-L JA521 array without yoke

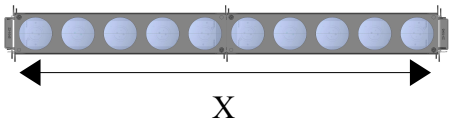


3.2 Part 2: Stacking arrays in bars

Bar with X **vertical** arrays

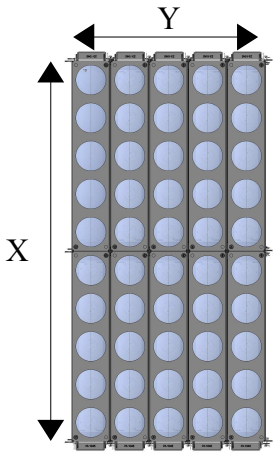


Bar with X **horizontal** arrays

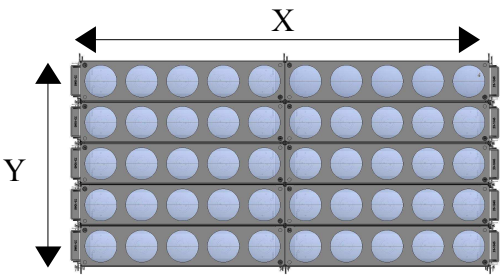


3.3 Part 3: Stacking bars of arrays

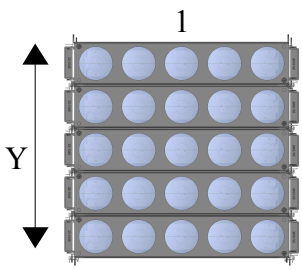
Y**vertical** bars with X arrays



Y **horizontal** bars with X arrays



Special case of a column of arrays



Y horizontal arrays

4) JA504 B-coupler

A B-coupler comprises 2 brackets (figure 1 – item 1) and a bag of fixings (figure 1 –item 2). The 2 brackets are identical.

ⓘ ***Note:*** Figure 1 shows the 2 brackets assembled

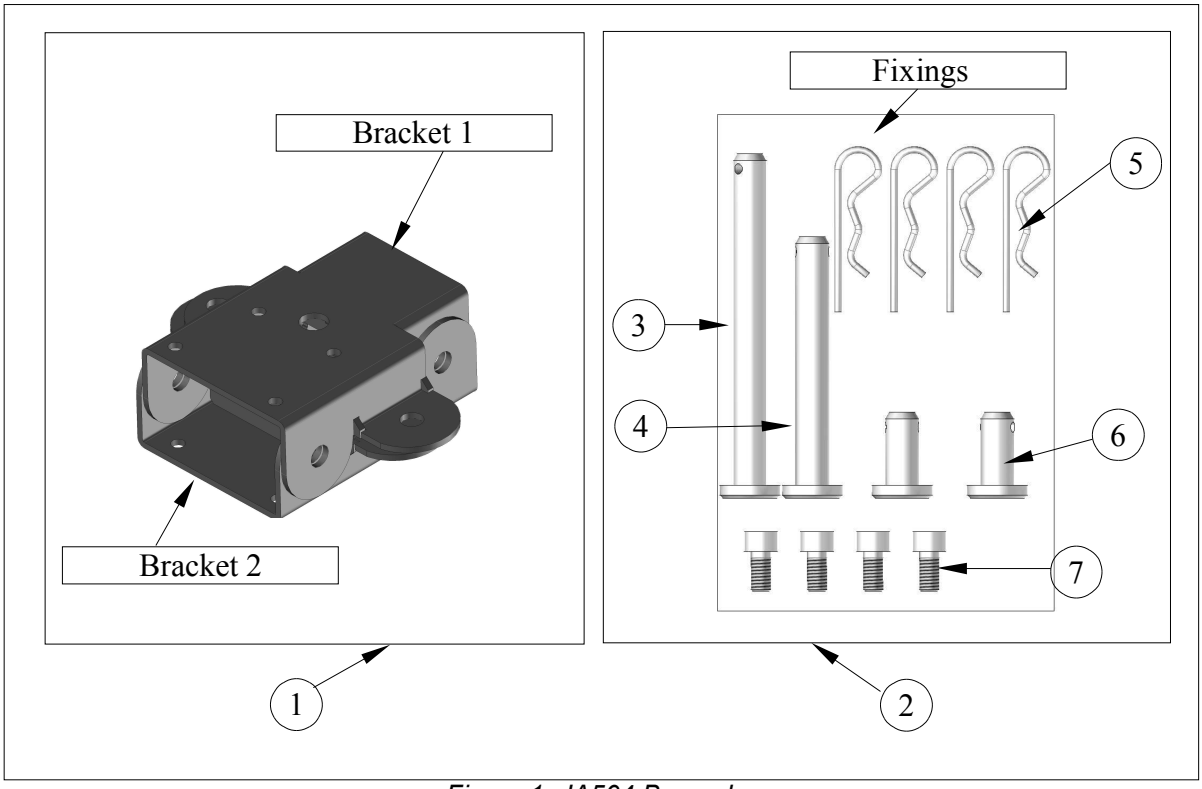


Figure 1: JA504 B-coupler

The fixings (figure 1 – item 2) comprise:
- 1 stainless steel locking pin Ø10mm x 100mm (figure 1 – item 3)
- 1 stainless steel locking pin Ø10mm x 75mm (figure 1 – item 4)
- 2 stainless steel locking pins Ø10mm x 22mm (figure 1 – item 6)
- 4 hair pin cotters (figure 1 – item 5)
- 4 M6x12 socket cap screws (DIN 912) black (figure 1 – item 7)

ⓘ ***Note:*** To assemble the 2 brackets, the 4 socket cap screws should be fitted to the 4 screws already in the array yoke.

5) Step 1: Removing and fitting the JA521 array yoke

5-1 Removing the yoke from the JA521 array

First remove the yoke from the array to replace it by the brackets. Unscrew the 4 M6x12 socket cap screws (figure 2 – item 1) at each end of the yoke (figure 2 – item 3) and then remove the yoke. Keep the yoke in a safe place (figure 2 – item 2)

ⓘ ***Note:*** **Do not** remove the M6 lock nuts at each end of the yoke

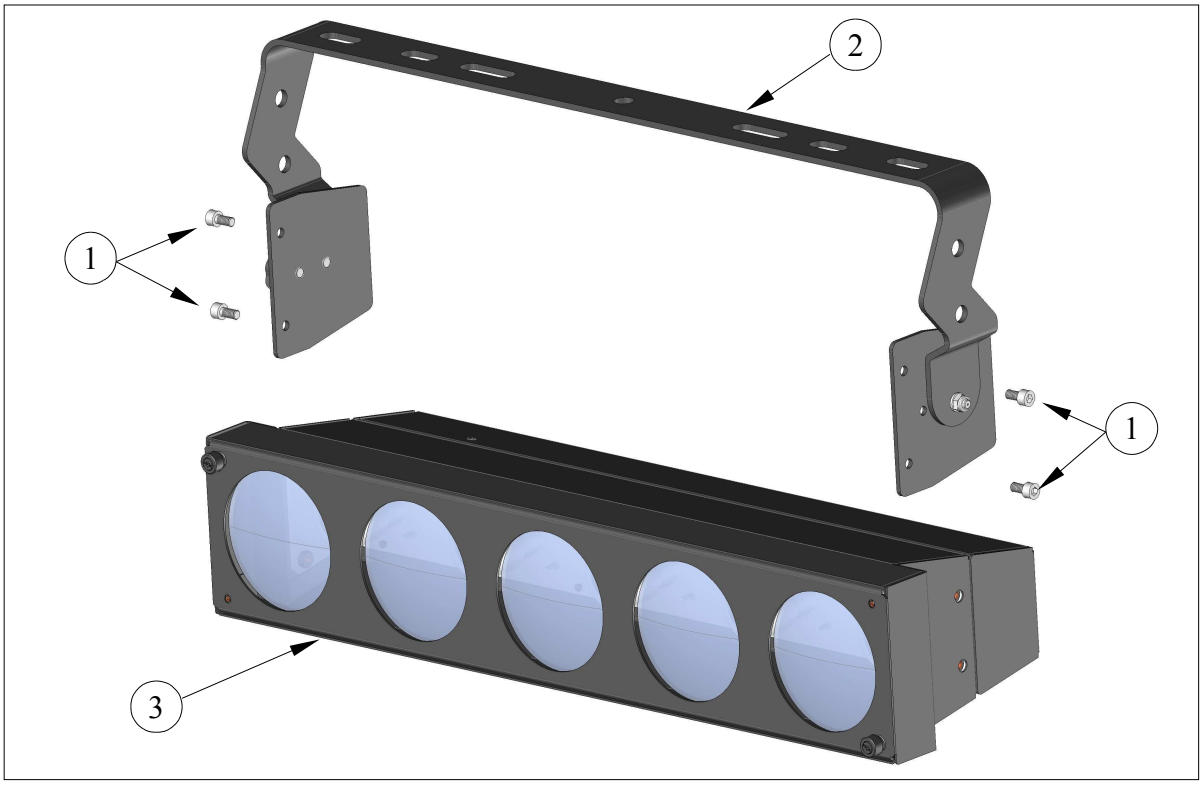


Figure 2: Removing the yoke from the JA521

ⓘ ***NB***
Keep these 4 screws handy for fitting the 2 brackets to the array.

5-2 Refitting the yoke to the JA521 array

To fit the yoke to the array (figure 2 – item 2), ensure that there is no bracket or other accessory already attached to the array (figure 2 – item 3).

As in step 5-1 (figure 2 – item 1), keep the 4 M6x12 socket cap screws (DIN 912) for fitting the yoke (figure 2 – item 2) to the array (figure 2 – item 3).

ⓘ ***Note:*** When refitting the yoke (figure 2 – item 2), check that it is the right way round with respect to the array (figure 2 – item 3) so that all the arrays have the yoke the same way round (the yoke clamping handle should be the same end as the array switch).

6) Step 2: Fitting the JA504 B-couplers to the JA521 Jarag-L

> ⓘ ***Note:*** Before fitting the B-couplers, ensure that there is no bracket or other accessory already attached to the array (figure 3 – item 3).

To fit the 2 brackets, you need:

- The 4 M6x12 socket cap screws from the bag of fixings
- The 4 M6x12 socket cap screws previously removed from the yoke (step 1).
- A 5mm Allen key or 5mm hex screwdriver.

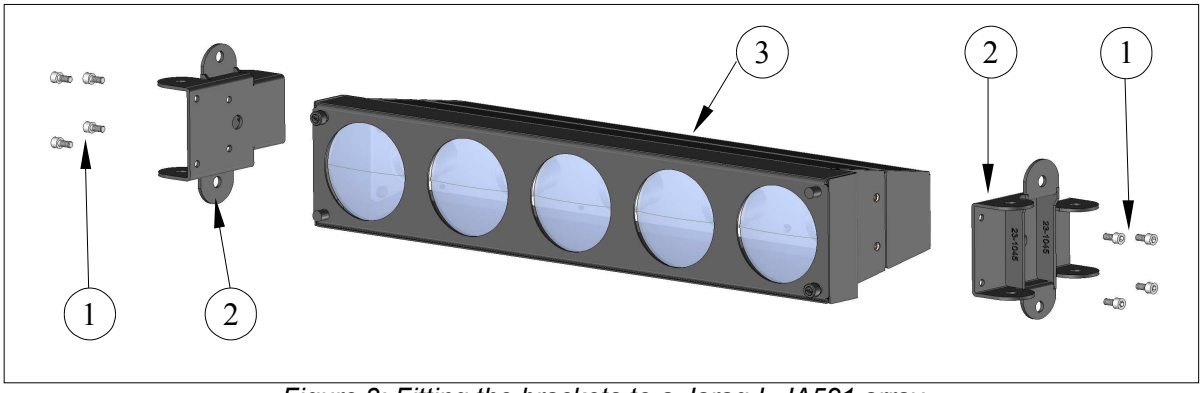


Figure 3: Fitting the brackets to a Jarag-L JA521 array

At the end of step 5-1 "Removing the yoke from the JA521 array", 4 hank bushes can be seen at each end of the array (figure 3 – item 3).

Fit one bracket (figure 3 – item 2) at each end of the array (figure 3 – item 3) using 4 M6x12 socket cap screws (figure 3 – item 1) in the 4 hank bushes (torque = 3Nm).

> ⓘ ***Note:*** the 2 brackets are identical and interchangeable.
> They can be fitted to either end.

7) Step 3: Making Jarag-L bars using the B-couplers

To couple two arrays, you need:

- The Ø10mm x 100mm locking pin from the bag of fixings
- The Ø10mm x 75mm locking pin from the bag of fixings
- Two hair pin cotters from the bag of fixings

7-1 Positioning

ⓘ ***Note:*** It is easier to couple the arrays by placing them on the floor, with the lamps downwards

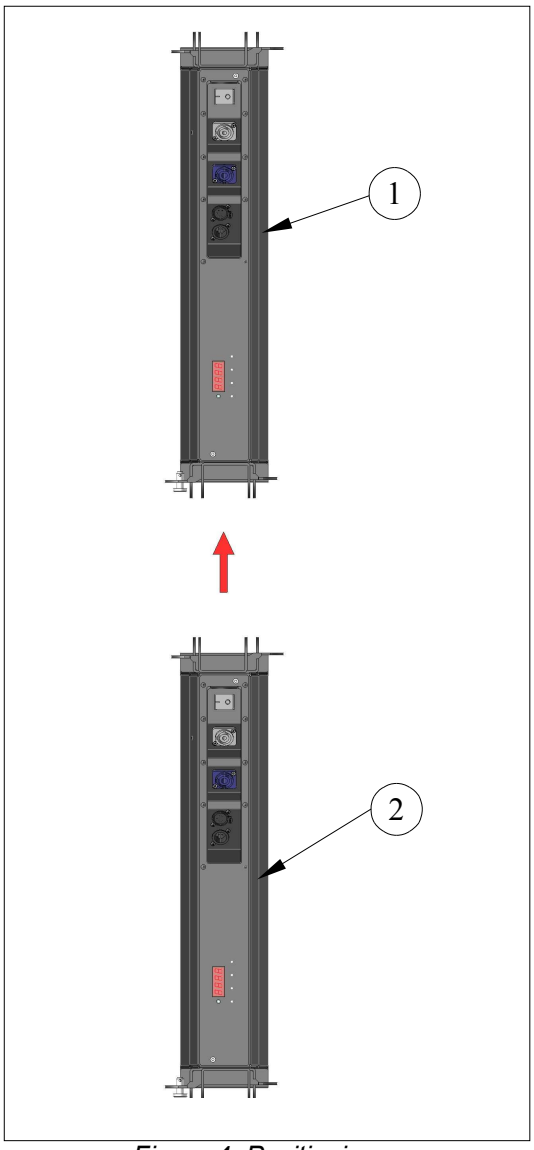


Figure 4: Positioning

Place 2 Jarag-Ls (with brackets) end to end and slot them together so that the arrays (figure 4– items 1 and 2) are perfectly aligned.

7-2 Coupling the arrays

> ⓘ ***Note:*** It is easier to couple the arrays
> by placing them on the floor, with the lamps downwards

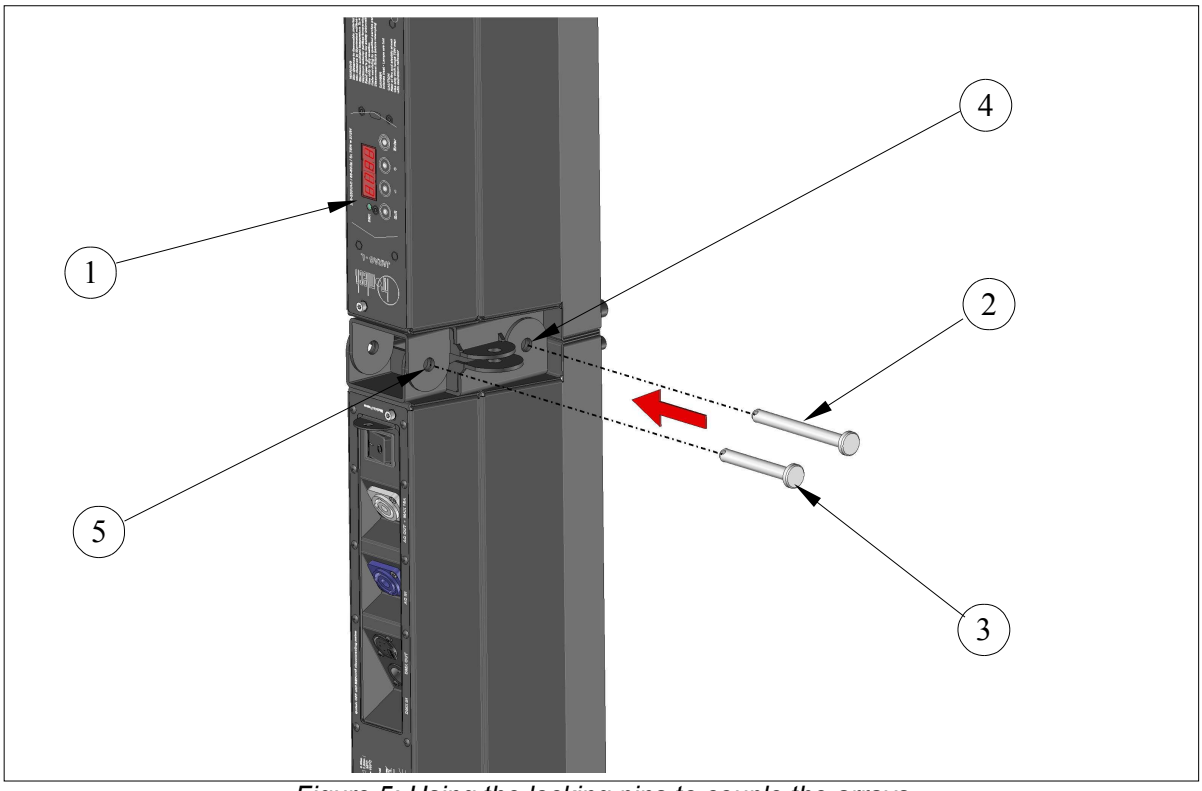


Figure 5: Using the locking pins to couple the arrays

Insert the Ø10mm x 100mm locking pin (figure 5 – item 2) into the hole nearer to the front (figure 5 – item 4) and the Ø10mm x 75mm locking pin (figure 5 – item 3) into the second hole (figure 5 – item 5). This gives a rigid bar of 2 arrays (figure 5 – item 1).

7-3 Locking the couplings

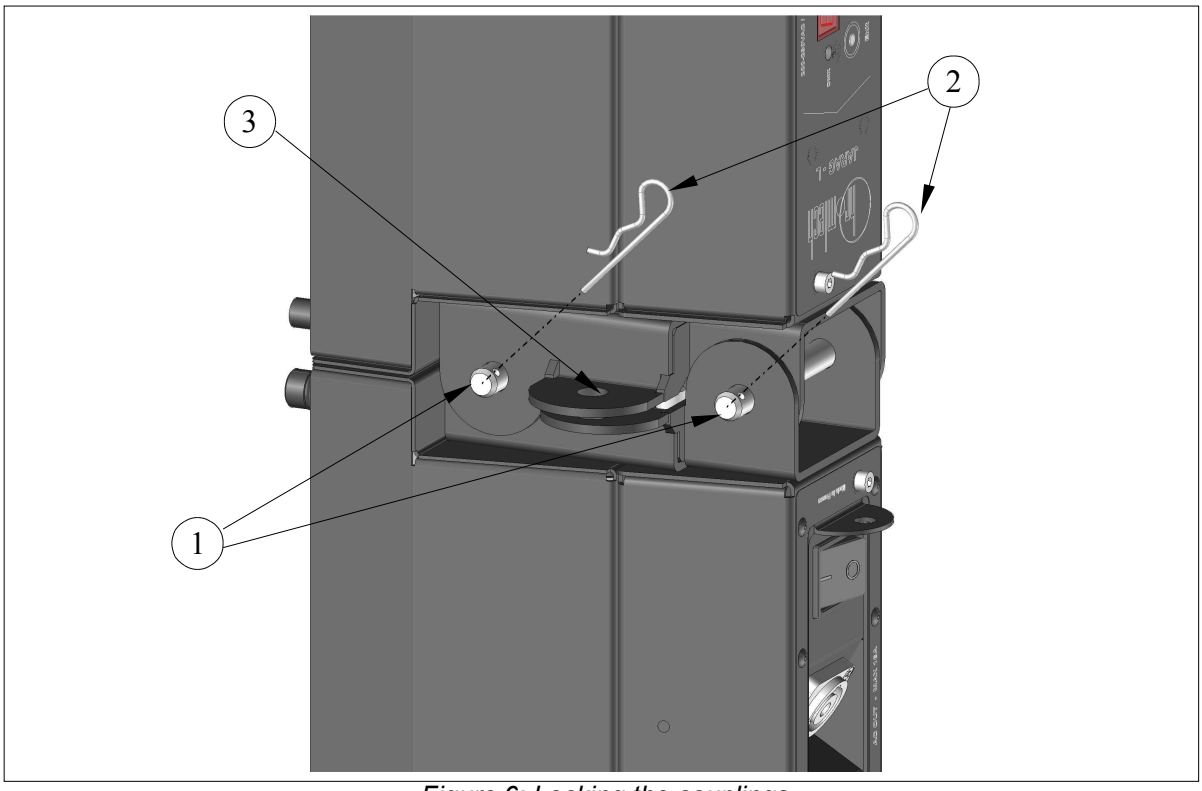


Figure 6: Locking the couplings

Insert a hair pin cotters (figure 6 – item 2) into each of the locking pins (figure 6 – item 1) that were inserted at step 7-2, to lock the 2 arrays together. Check that the hair pin cotters are secure after insertion.

Repeat as required to lock all Jarag-Ls in the stack.

ⓘ ***Note:*** To check that the arrays are aligned correctly, try to insert a Ø10mm x 22mm locking pin (figure 1 – item 6) through the holes (figure 6 – item 3). If the pin cannot be inserted, the arrays are not aligned. Reassemble the bar (Step 3) until the locking pin can be fully inserted (figure 1 – item 6)

8) Step 4: Completing the bar of X arrays

To complete the bar of X arrays (figure 7 – item 2), add a bracket (figure 7 – item 1) to each end of the bar and secure it as described in Step 3.

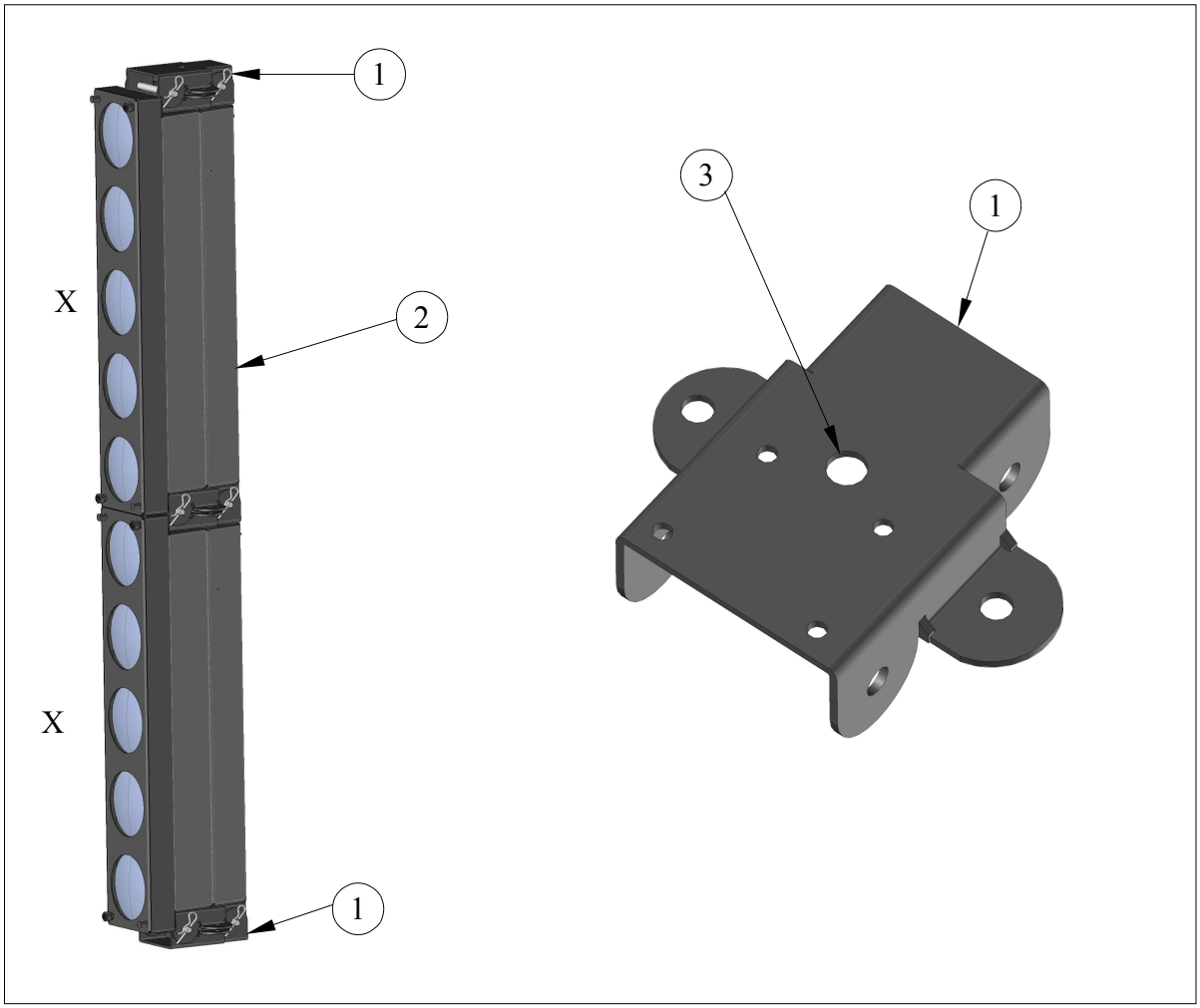


Figure 7: Completing a bar of X arrays

> ⓘ ***Note***
> Fitting 2 brackets to the ends of a bar of X arrays provides a complete uniform mounting system when Y bars are coupled.

> ⚠ ***NB:***
>
> A lifting ring or mounting hook can be attached through the hole in the brackets (figure 7 – item 3). The rings or hooks should be fitted to the brackets before Step 4.
>
> The lifting ring or hook should be dimensioned according to the weight to be lifted.

9) Step 5: Coupling Y VERTICAL bars of X arrays

(Can be used to make round columns)

To couple Y vertical bars of X arrays, you need:
➢Ø10mm x 22mm locking pins (figure 1 – item 6)
➢Hair pin cotters (figure 1 – item 5)

> ⓘ ***Note:*** It is easier to couple the bars by placing them on the floor, with the lamps downwards

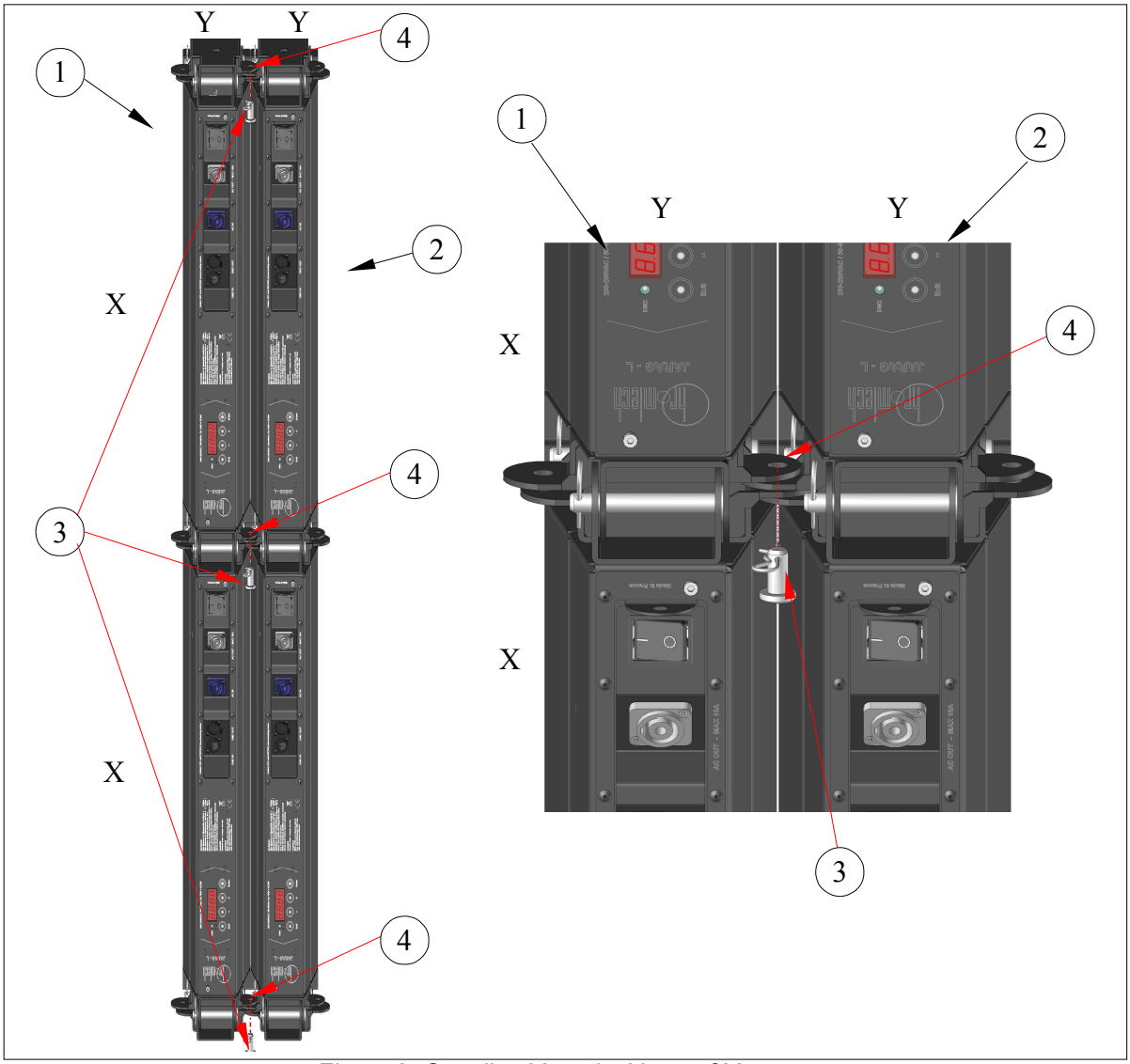


Figure 8: Coupling Y vertical bars of X arrays

Couple Y vertical bars of X arrays (figure 8 – items 1 and 2) using Ø10mm x 22mm locking pins (figure 8 – item 3) though the holes (figure 8 – item 4).

> ⚠ ***NB***
>
> The locking pins (figure 8 – item 3) **must** go through all 4 holes (figure 8 – item 4) in the 4 brackets.
>
> If the locking pins cannot be inserted, the arrays are not correctly aligned. The brackets are designed so that the arrays cannot be coupled if they are not correctly aligned (foolproof assembly).

10) Step 6: Coupling Y HORIZONTAL bars of X arrays

(For horizontal line arrays)

To couple Y horizontal bars of X arrays, you need:
➢Ø10mm x 22mm locking pins (figure 1 – item 6)
➢Hair pin cotters (figure 1 – item 5)

> ⓘ ***Note:*** It is easier to couple the bars by placing them on the floor, with the lamps downwards

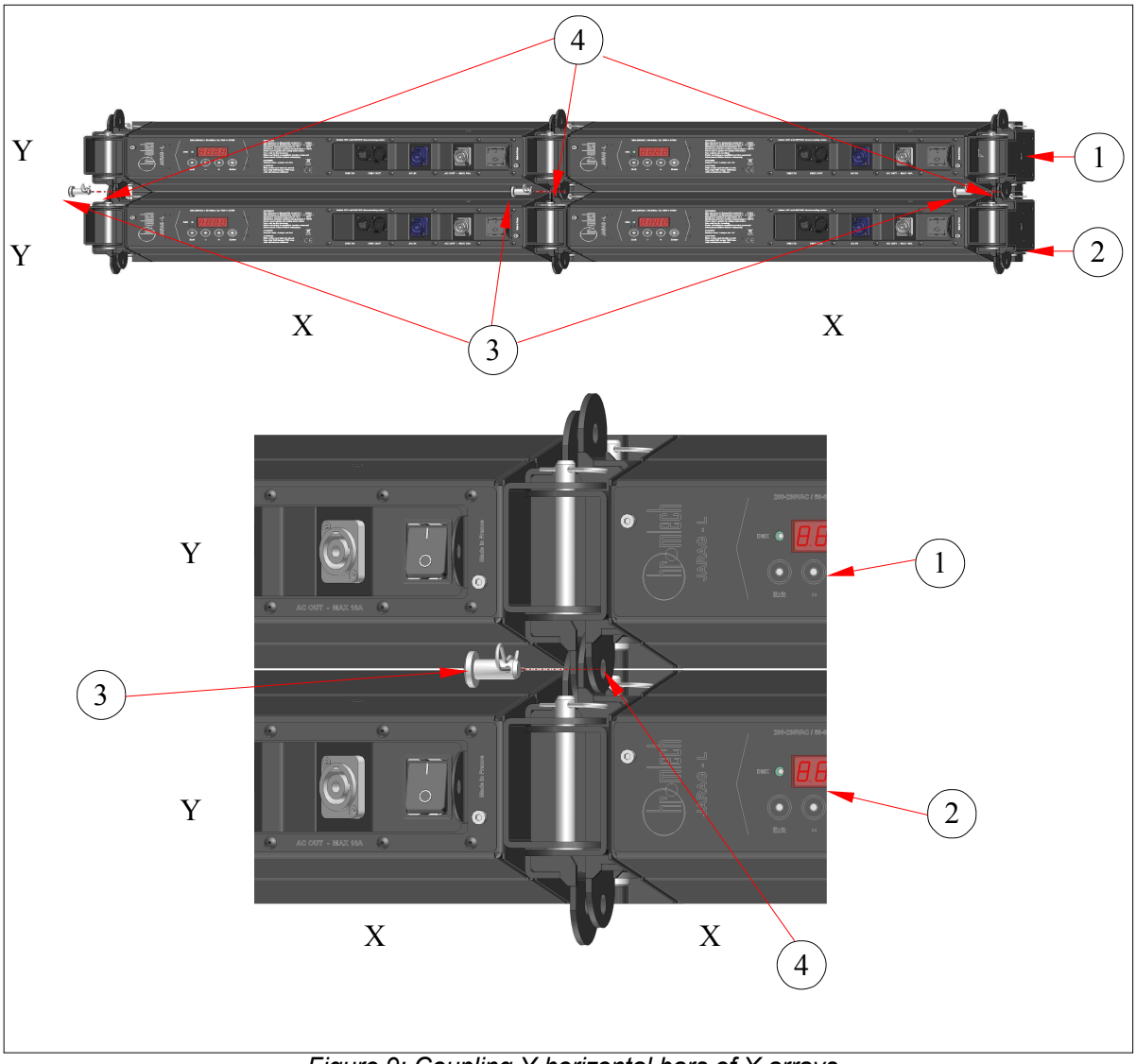


Figure 9: Coupling Y horizontal bars of X arrays

Couple Y horizontal bars of X arrays (figure 9 – items 1and 2) using Ø10mm x 22mm locking pins (figure 9 – item 3) through the holes (figure 9 – item 4).

> ⚠***NB :***
>
> The locking pins(figure 9 – item 3) **must** go through all 4 holes (figure 9 – item 4) in the 4 brackets.
>
> If the locking pins cannot be inserted, the arrays are not correctly aligned. The brackets are designed so that the arrays cannot be coupled if they are not correctly aligned (foolproof assembly).

11) Dimensions and weight

JA521 without yoke
Weight of an array without yoke: 3.2 kg / 7.05 lb
Material: Aluminium AG3

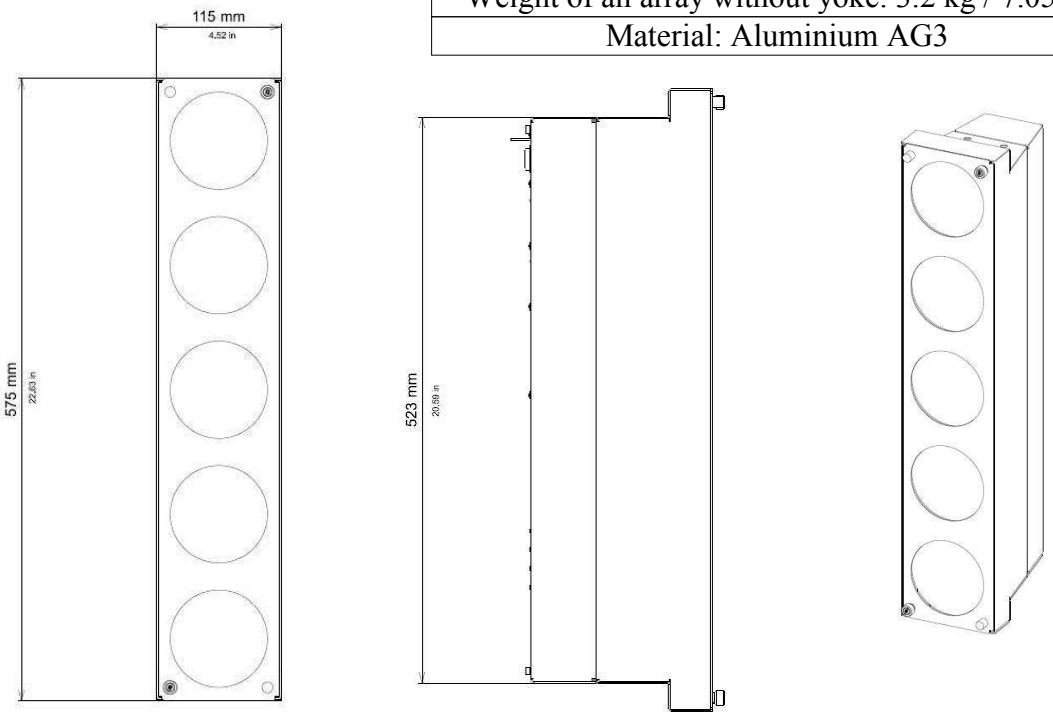


Figure 10: Dimensions and weight of a JA521 Jarag-L array without yoke

JA504
Material: HLE steel
Weight of one B-coupler: 1.2kg / 2.65 lb

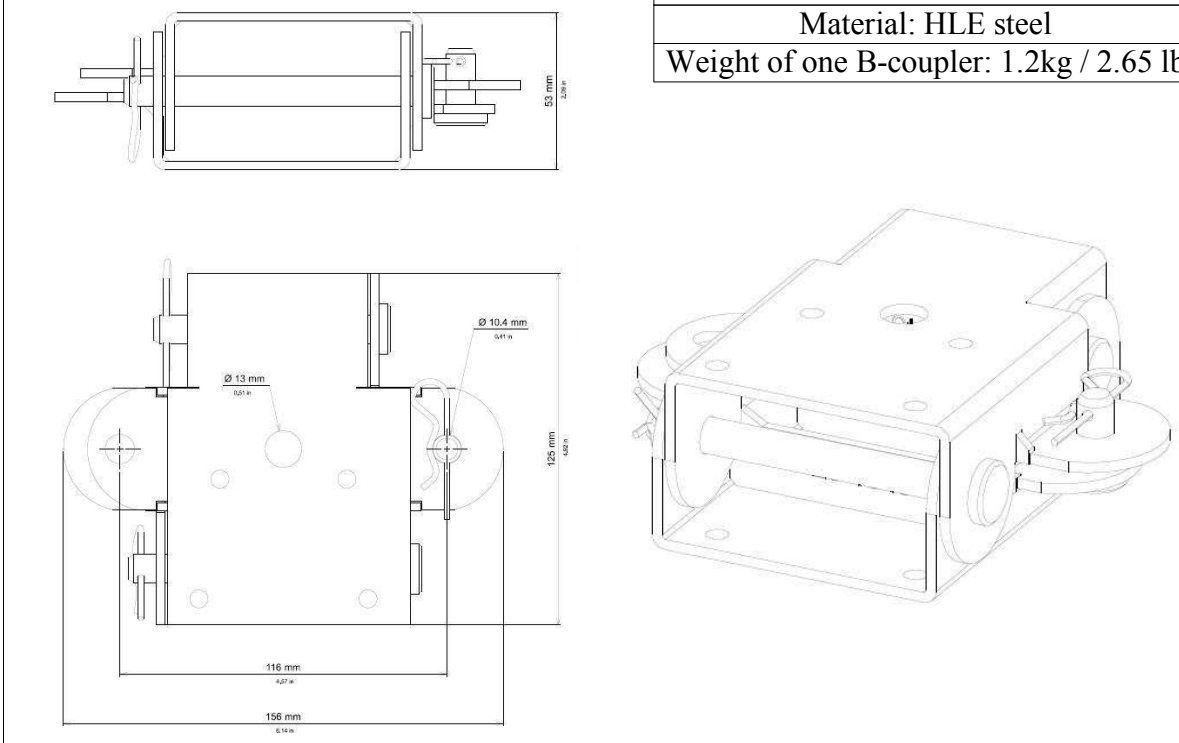


Figure 11: Dimensions and weight of a JA504 B-coupler

12) Particular specifications

The arrays can be lifted vertically or horizontally, for different types of structure or design. When lifted vertically the force passes through the arrays and when lifted horizontally the whole force passes through the B-couplers.

12-1 Lifting VERTICAL bars

The arrays **must** be coupled using Ø10mm x 100mm and Ø10 x 75mm locking pins (figure 5 - items 2 and 3). The bar of X arrays is suspended in a straight vertical line.

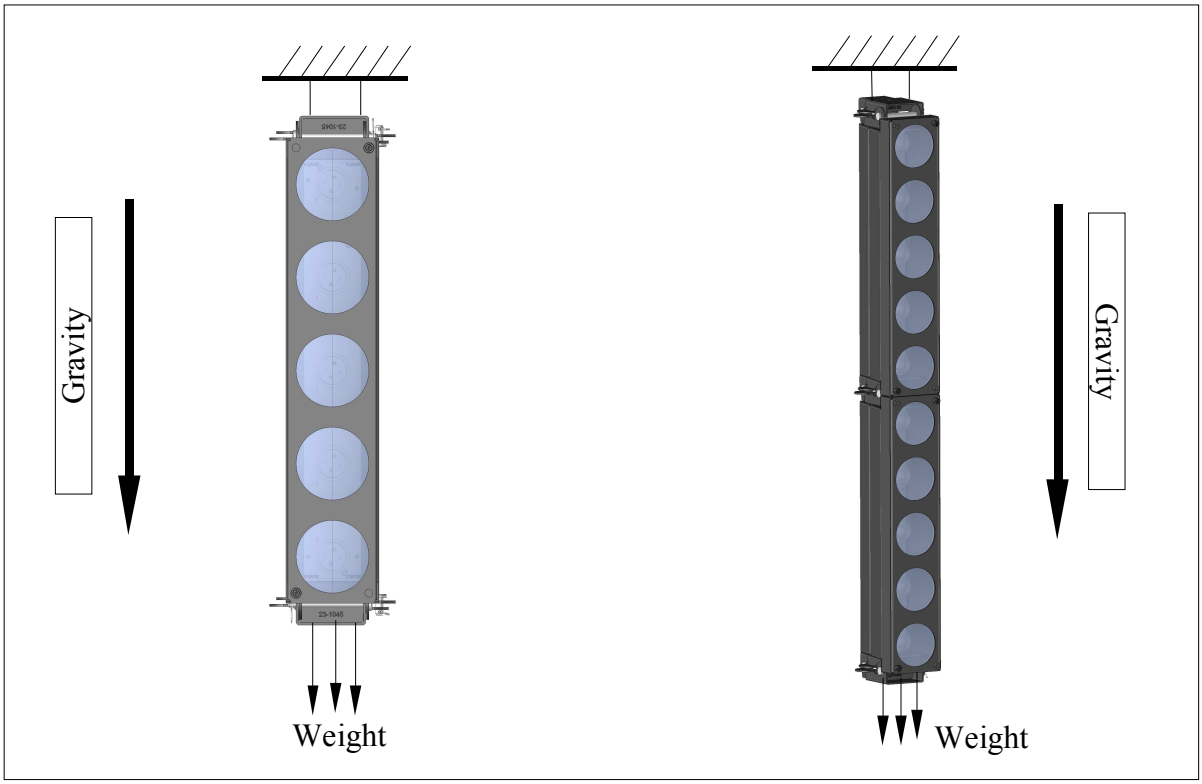


Figure 12: Lifting vertical bars

The force is transmitted through the arrays. Account should therefore be taken of the array being weaker than the B-coupler.

⚠ ***NB:*** ***The SWL of a vertical bar of Jarag-Ls with B-couplers is 70 kg (maximum 12 Jarag-Ls + 13 B-couplers + 16 kg of cables)***

⚠ ***NB:*** When calculating the load for a complete set of arrays, remember to include the weight of the DMX and supply cables and any other accessories (hooks, lifting rings, etc.)

12-2 Lifting columns of HORIZONTAL arrays

The lifting force is borne solely by the B-couplers and not by the array. As the B-couplers are stronger, they can be used to suspend larger arrays.

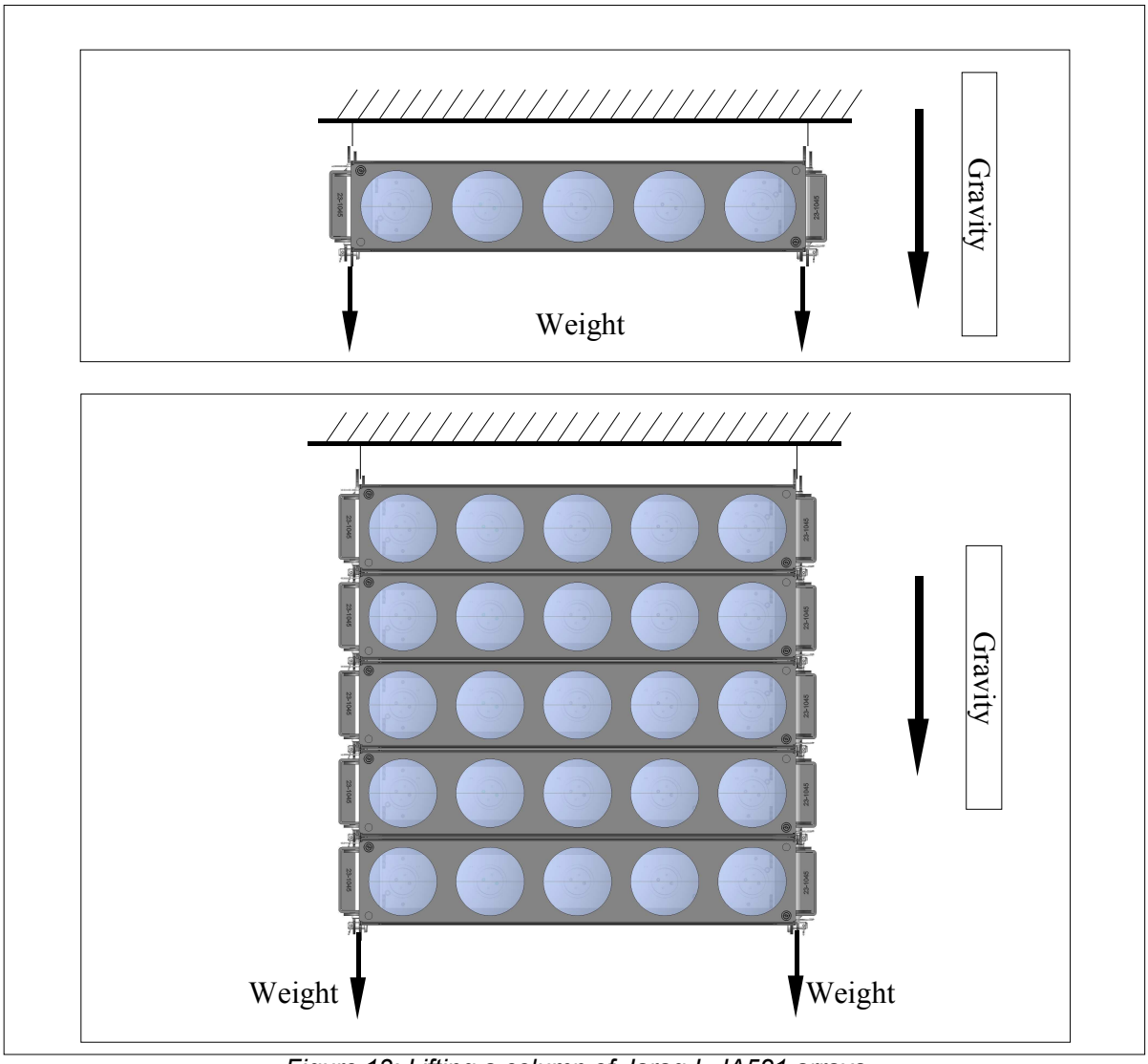


Figure 13: Lifting a column of Jarag-L JA521 arrays

⚠ NB: The SWL for a horizontal bar of Jarag-Ls with B-couplers is 300 kg (maximum 50 Jarag-Ls + 100 B-couplers + 40 kg of cables)

⚠ ***NB:*** When calculating the load for a complete set of arrays, remember to include the weight of the DMX and supply cables and any other accessories (hooks, lifting rings, etc)

12-3 Lifting Y horizontal bars of X arrays

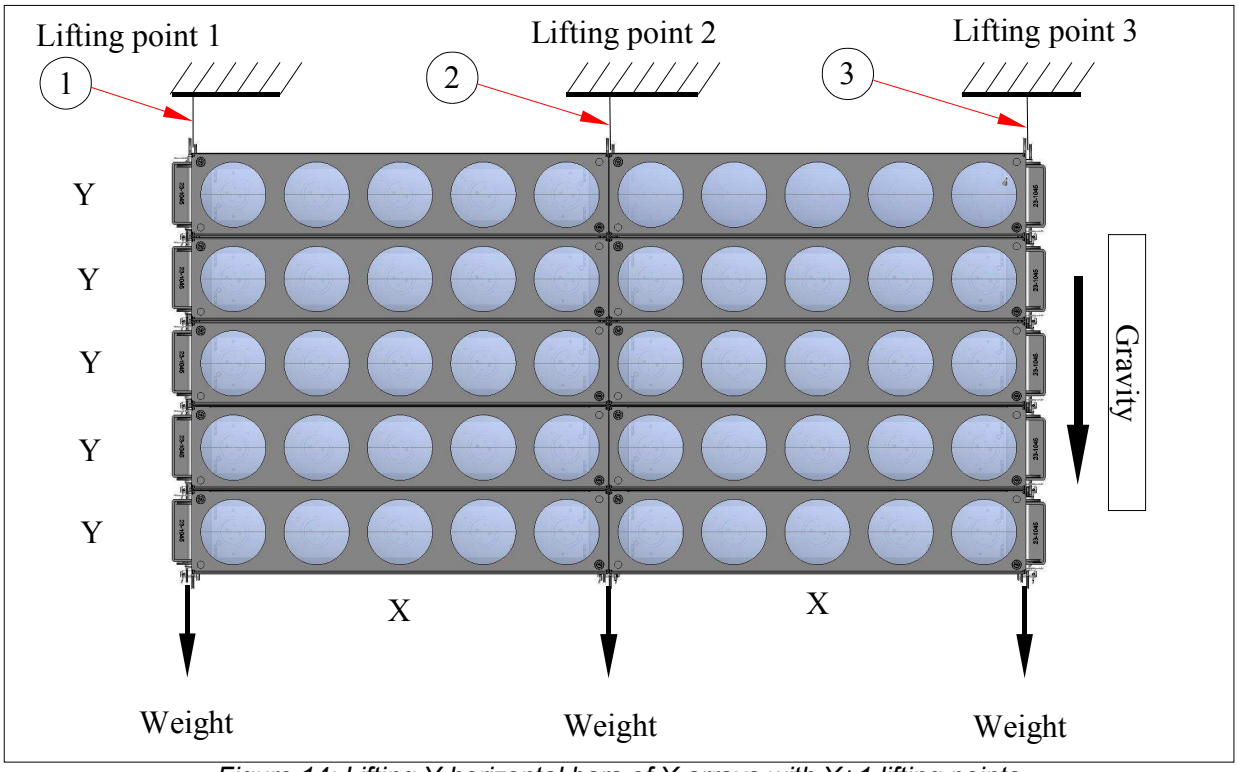


Figure 14: Lifting Y horizontal bars of X arrays with X+1 lifting points

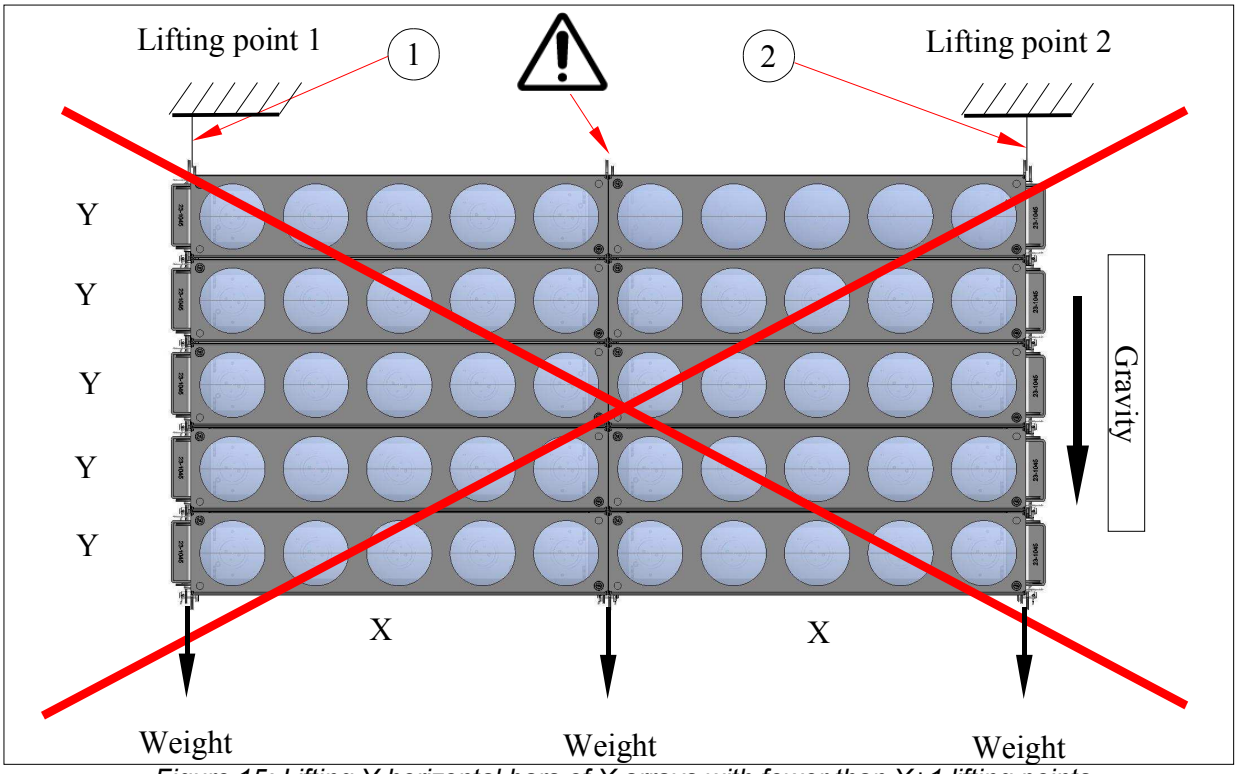


Figure 15: Lifting Y horizontal bars of X arrays with fewer than X+1 lifting points

An assembly of Y horizontal bars of X arrays must have X+1 lifting points (figure 14 - items 1, 2 and 3). For example, to suspend Y horizontal bars of 4 arrays (X), the assembly must have 5 lifting points.

Chromlech
19, avenue Gabriel Fauré - 35235 Thorigné Fouillard
Tel: +33 (0)2 23 20 77 67 - Fax: +33 (0)2 23 20 75 71
E-mail: contact@chromlech.com – Website: www.chromlech.com